

## THE CLAIMS

What is claimed is:

1. A golf ball comprising a cover layer encasing a subassembly, the subassembly  
5 comprising a barrier layer encasing a core, wherein the barrier layer has a water vapor  
transmission rate of less than about 0.6 grams•mm/m<sup>2</sup>•day and a thickness of about 0.001 inches  
to about 0.1 inches, and comprises a composition comprising at least one curable material and  
flakes selected from a group consisting of aluminum flakes, iron oxide flakes, micaceous flakes,  
flaked glass, leafing aluminum flakes, and graphite flakes.

10 2. The golf ball of claim 1, wherein the composition forms a tortuous path against water  
vapor encroachment.

3. The golf ball of claim 1, wherein the at least one curable material is selected from a group  
15 consisting of:

polymers comprising a recurring unit of RSS, where R is a divalent organic radical, and  
SS is a disulfide linkage;

polymers comprising a recurring structure of S-CH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>2</sub>-O-CH<sub>2</sub>-CH<sub>2</sub>-S; and  
polysulfides having an average of at least about 1.8 sulfur atoms per sulfide linkage.

20 4. The golf ball of claim 1, wherein the curable material is selected from a group consisting  
of: polythiopolymercaptan polymers; alkyl thiuram polysulfides; solid polysulfides; liquid  
polysulfides; solvent-dispersed polysulfides; polymers comprising free mercapto groups;  
hygroscopic polymers; polymers having an elongation-to-break ratio of about 400% to about  
25 500%; reaction products of thio or hydroxyl terminated polysulfides and isocyanate terminated  
polysulfides or polyisocyanate; and polymers formed from at least one compound selected from  
the group consisting of aliphatic halide, alkylene chlorides, ethylene dichlorides, oxygen-  
containing aliphatic halides, bis-beta-chloroethyl ether, bis-beta-chloroethyl formal, and a  
mixture thereof.

6. The golf ball of claim 1, wherein the composition further comprises one or more substances selected from a group consisting of: deliquescent agents; desiccating agents; accelerating agents; deliquescent accelerating agents; desiccating, deliquescent, dormant curing and accelerating agents; flow-enhancing agents; dormant curing agents; cure-retarding agents; curing catalysts; chain stoppers; plasticizers; thixotropic agents; antioxidants; heat stabilizers; ionomers; phenolic resins; coumarone-indene resins; polyalkylene polymers; terpene resins; terpene esters; styrene-alkylene copolymers; organic or inorganic reinforcing fibrous materials; element sulfur; sulfur-containing compounds; lower alkyl tin oxides; alkali metal hydroxides; benzothiazyl disulfide; diphenyl guanidine; factice; and mixtures thereof.

7. The golf ball of claim 1, wherein the composition further comprises one or more substances selected from a group consisting of sodium oxide, barium oxide, calcium oxide, manganese dioxide, dibutyl tin oxide, sodium peroxide, barium peroxide, calcium peroxide, zinc peroxide, lead peroxide, sodium pyrophosphate peroxide, sodium carbonate peroxide, sodium perborate, sodium hydroxide, potassium hydroxide, calcium hydroxide, strontium hydroxide, sodium acetate, sodium carbonate, sodium phosphate, sodium molybdate, ammonium dichromate, and dinitro benzene.

8. The golf ball of claim 1, wherein the composition is an anhydrous mixture.

9. The golf ball of claim 1, wherein the composition is substantially cured in less than about 1 hour at about 70 °F to about 75 °F.

10. The golf ball of claim 1, wherein the composition effects wetting during formation of the barrier layer.

11. The golf ball of claim 1, wherein the curable material has a viscosity of about 300 centipoises to about 100,000 centipoises and a molecular weight of about 500 to about 500,000.

12. The golf ball of claim 1, wherein the composition is a one-part or two-part formulation that is millable, extrudable, melt-flowable, castable, or injection moldable.

13. The golf ball of claim 1, wherein the subassembly has a Shore D hardness of less than about 60.

5 14. The golf ball of claim 1, wherein the subassembly has a Shore D hardness of greater than about 50.

15. The golf ball of claim 1, wherein the barrier layer has a specific gravity of greater than about 1.3.

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16. A golf ball comprising a cover layer encasing a subassembly, the subassembly comprising a barrier layer encasing a core, wherein the barrier layer has a water vapor transmission rate of less than about 0.6 grams•mm/m<sup>2</sup>•day and a thickness of about 0.01 inches to about 0.1 inches, and comprises at least one curable material.

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17. The golf ball of claim 16, wherein the barrier layer further comprises flakes selected from a group consisting of aluminum flakes, iron oxide flakes, micaceous flakes, flaked glass, leafing aluminum flakes, and graphite flakes.

20 18. The golf ball of claim 16, wherein the barrier layer has a specific gravity of greater than about 1.2.

19. The golf ball of claim 16, wherein the composition is substantially cured in less than about 1 hour at about 70 °F to about 75 °F.

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20. A golf ball comprising a cover layer encasing a subassembly, the subassembly comprising a barrier layer encasing a core, wherein the barrier layer has a water vapor transmission rate of less than about 0.6 grams•mm/m<sup>2</sup>•day and a thickness of about 0.001 inches to about 0.1 inches, and comprises at least one material selected from a group consisting of:

30 polythiopolymercaptan polymers; alkyl thiuram polysulfides; solid polysulfides; liquid polysulfides; solvent-dispersed polysulfides; polymers comprising free mercapto groups;

hygroscopic polymers; polymers having an elongation-to-break ratio of about 400% to about 500%; polymers comprising a recurring structure of S-CH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>2</sub>-O-CH<sub>2</sub>-CH<sub>2</sub>-S; polymers comprising a recurring unit of RSS, where R is a divalent organic radical, and SS is a disulfide linkage; polysulfides having an average of at least about 1.8 sulfur atoms per sulfide linkage; reaction products of thio or hydroxyl terminated polysulfides and isocyanate terminated polysulfides or polyisocyanate; and polymers formed from at least one compound selected from the group consisting of aliphatic halide, alkylene chlorides, ethylene dichlorides, oxygen-containing aliphatic halides, bis-beta-chloroethyl ether, bis-beta-chloroethyl formal, and a mixture thereof.

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